IN THE CLAIMS:

Please cancel claims 1-20 without prejudice or disclaimer, and substitute new claims 21-40 therefor as follows:

Claims 1-20 (Cancelled).

21. (New) A method for configuring a communication network having a plurality of antennas comprising the steps of:

a) including in said plurality of antennas at least one reconfigurable antenna adapted to serve communication traffic in a respective coverage area, said reconfigurable antenna having a radiation diagram exhibiting a plurality of selectively adjustable gain values for a set of directions, each direction in said set defining a propagation path between the antenna and a portion of said coverage area;

b) determining, for each direction in said set, at least one value of communication traffic and at least one attenuation value over said propagation path; and

c) selectively and independently allotting to each direction in said set a respective gain value in the radiation diagram of said reconfigurable antenna as a function of said at least one of said traffic value (T_{pixel}) and of said attenuation value (a_{pixel}) determined for said direction.

22. (New) The method of claim 21, wherein said gain value for each said direction is allotted as the gain maximising a ratio of said traffic value to said attenuation value,

23. (New) The method of claim 21, wherein said gain value for each said direction is allotted as the gain optimising a cost function ($f(a_0)$) wherein said traffic value and said attenuation value represent benefit and cost factors, respectively.

24. (New) The method of claim 21, comprising the steps of:

subdividing said coverage area of said at least one reconfigurable antenna in a plurality of portions each including a plurality of pixels, wherein each said pixel has an associated value of communication traffic (T_{pixel}) and a propagation path from said antenna with an associated attenuation value, (a_{pixel}), whereby each said pixel has an associated benefit/cost ratio being the ratio of said associated communication traffic value (T_{pixel}) to said associated attenuation value (a_{pixel});

defining an optimisation function for all the pixels within a given portion depending on said benefit/cost ratio for the pixels in said portion; and

allotting to the direction in said radiation diagram identifying each said portion a respective gain value optimising said optimisation function.

25. (New) The method of claim 24, wherein each said pixel having associated a given value of attenuation, and a_{min} being the minimum value of the values of attenuation for all the pixels in said given portion, said optimisation function is defined as

$$f(a_o) = (1/a_o)\Sigma\ T_{pixel}/a_{pixel}$$

where the summation extends for a_{pixel} from a_{min} to a_0 over all the pixels in a given portion of said coverage area, and T_{pixel}/a_{pixel} is said benefit/cost ratio.

26. (New) The method of claim 21, comprising the steps of:

selecting said at least one reconfigurable antenna as an antenna having a maximum gain value (G_{max});

determining for each direction in said set a respective attenuation value (a_{mi}) to be compensated by a respective gain value in said radiation diagram, said attenuation values having a maximum (A_{max}); and

associating with said direction in said radiation diagram gain values based on the relationship:

$G_{mi} = G_{max} - (A_{max} - a_{mi})$, wherein G_{max} is said maximum gain, A_{max} is said maximum of attenuation and a_{mi} is the attenuation value determined for the direction to which the gain G_{mi} is assigned.

27. (New) The method of claim 21, comprising the steps of:

determining a field intensity value (E_{min}) required to provide said communication traffic over the area covered by the radiation diagram of said at least one reconfigurable antenna;

determining a power value (P_{feed}) for said antenna to provide said field value (E_{min}),

comparing said power value determined (P_{feed}) with a maximum threshold value; and

if said power value as determined (P_{feed}) exceeds said maximum threshold value, issuing a signal indicating that the antenna is to be relocated.

28. (New) The method of claim 21, comprising the steps of:

configuring said network as a step of planning a still undeployed network; and

determining said respective value of communication traffic (T_{pixel}) as a planned parameter of said still undeployed network.

29. (New) The method of claim 21, comprising the steps of:

configuring said network as a step of managing an already existing network; and

determining said respective value of communication traffic (T_{pixel}) as at least one of a forecast parameter and a measured parameter of said already existing network.

30. (New) A method for configuring a communication network including a plurality of antennas each serving a respective amount of traffic within a respective coverage area, comprising the steps of:

determining a reference amount of traffic (T_m) served by said plurality of antennas in the network;

setting at least one difference threshold with respect to said reference amount of traffic (T_m);

identifying among said plurality of antennas a subset of antennas, wherein the respective amounts of traffic served by the antennas in said subset reach said difference threshold; and

configuring the antennas in said subset as reconfigurable antennas, each having a radiation diagram exhibiting a plurality of selectively adjustable gain values for a set of directions, each direction in said set defining a propagation path between the antenna and a portion of said coverage area; and

applying to the reconfigurable antennas in said subset the steps b) and c) of claim 21 to reconfigure said network.

31. (New) The method of claim 30, comprising the step of defining said reference amount of traffic as the average amount of traffic (T_m) served by said plurality of antennas.

32. (New) The method of claim 30, comprising the step of checking the performance level of said reconfigured network.

33. (New) The method of claim 32, comprising the steps of:

defining at least one criterion for satisfactory performance level of said network;

checking the performance level of said reconfigured network against said criterion; and

if said checking reveals that said performance level fails to meet said criterion, taking at least one of the steps of:

varying said reference amount of traffic (T_m),

increasing the number of said reconfigurable antennas in said subset, and

increasing the total number of antennas in the network.

34. (New) A network architecture for a communication network including a plurality of antennas comprising:

at least one reconfigurable antenna adapted to serve communication traffic in a respective coverage area, wherein

said at least one reconfigurable antenna has a radiation diagram exhibiting a plurality of selectively adjustable gain values for a set of directions, and wherein

each direction in said set

defines a propagation path between the antenna and a portion of said coverage area, and

has associated

at least one value of communication traffic (T_{pixel}) and at least one attenuation value (a_{pixel}) over said propagation path, and

a respective gain value for said radiation diagram which is a function of at least one of said traffic value (T_{pixel}) and of said attenuation value (a_{pixel}).

35. (New) The network architecture of claim 34, wherein said gain value for each said direction is the gain maximising a ratio of said traffic value to said attenuation value.

36. (New) The network architecture of claim 34, wherein said gain value for each said direction is the gain optimising a cost function ($f(a_0)$) wherein said traffic value and said attenuation value represent benefit and cost factors, respectively.

37. (New) The network architecture of claim 34, wherein

said coverage area of said at least one reconfigurable antenna is subdivided in a plurality of portions each including a plurality of pixels, wherein each said pixel has an associated value of communication traffic (T_{pixel}) and a propagation path from said antenna with an associated attenuation value (a_{pixel}), whereby each said pixel has an associated benefit/cost ratio being the ratio of said associated communication traffic value (T_{pixel}) to said associated attenuation value (a_{pixel}).

for all the pixels within a given portion an optimisation function exists depending on said benefit/cost ratio for the pixels in said portion, and

said gain value for each said direction is the gain optimising said function.

38. (New) The network architecture of claim 37, wherein each said pixel having associated a given value of attenuation and a_{min} is the minimum value of the values of attenuation for all the pixels in said given portion, said optimisation function being defined as

$$f(a_o) = (1/a_o)\Sigma\, T_{pixel}/a_{pixel}$$

where the summation extends for a_{pixel} from a_{min} to a_0 over all the pixels in a given portion of said coverage area, wherein T_{pixel}/a_{pixel} is said benefit/cost ratio.

39. (New) The network architecture of claim 34, wherein

said at least one reconfigurable antenna is an antenna having a maximum gain value (G_{max}), and wherein for each direction in said set a respective attenuation value (a_{mi}) exists to be compensated by a respective gain value in said radiation diagram, said attenuation values having a maximum (A_{max}), and

each said direction in said radiation diagram has an associated gain value G_{mi} based on the relationship:

$G_{mi} = G_{max} - (A_{max} - a_{mi})$, wherein G_{max} is said maximum gain value, A_{max} is said maximum attenuation and a_{mi} is an attenuation value determined for the direction to which the gain value G_{mi} is assigned.

40. (New) A computer program product capable of being loadable in the memory of at least one computer and including software code portions for performing the method of any one of claims 21 to 33.

IN THE ABSTRACT

Replace the abstract originally provided on the cover sheet of the PCT application with the new abstract as follows: A new abstract numbered page 30 is enclosed for the last page of the application following the claims.

ABSTRACT OF THE DISCLOSURE

A communication network includes a plurality of antennas and includes among the antennas at least one reconfigurable antenna adapted to serve communication traffic in a respective coverage area, the reconfigurable antenna having a radiation diagram exhibiting a plurality of selectively adjustable gain values for a set of directions, each direction in the set defining a propagation path between the antenna and a portion of the coverage area, determining, for each direction in the set, at least one value of communication traffic and at least one attenuation value over the propagation path, and selectively and independently alloting to each direction in the set a respective gain value as a function of at least one of the value of communication traffic and the attenuation value determined for that direction. The arrangement is adapted for use in communication networks such as second and third generation mobile communication networks employing electrically controllable antennas.